REMARKS

The Office Action dated December 18, 2003, has been reviewed in detail and the application has been amended in the sincere effort to place the same in condition for allowance. Reconsideration of the application and allowance in its amended form are requested based on the following remarks.

Applicants retain the right to pursue broader claims under 35 U.S.C. §120.

Applicants have provided a unique solution with respect to problems regarding ZINC-CONTAINING OPTICAL GLASS MATERIALS. Applicants' solution is now claimed in a manner that satisfies the requirements of 35 U.S.C. §102 and §112.

Rejection of Claims 1-18 Under 35 U.S.C. §102:

Claims 1-18 were rejected under 35 U.S.C. §102. Claims 1-18 have been canceled herein, without prejudice, and newly-presented Claims 23-44 will be discussed herein with respect to the applied prior art references.

Rejection of Claims 1, 2, 8-10, and 14-18 Under 35 U.S.C. §102 (Paloschi et al., U.S. Patent No. 6,235,667):

Paloschi, as understood, shows a lead-free glass that is

"suitable for use as imitation lead crystal tableware and decorative crystal glassware" (Paloschi, Abstract). Paloschi teaches the creation of imitation lead crystal tableware and glassware which does not contain lead since lead is undesirable because of its potential toxicity. Paloschi utilizes alternative compounds in place of lead. Paloschi specifically points out in column 3, lines 45-67, and column 4, lines 1-8, that lead-free glasses of similar composition exist in the prior art, specifically U.S. Patent No. 4,106,946 to Ritze and U.S. Patent No. 4,472,030 to Tachibana et al. However, according to Paloschi, these prior art references do not suggest the use of such glasses as tableware. Rather, according to Paloschi, Ritze discloses a colored filter glass and Tachibana discloses a cesium-containing optical glass for the production of lenses. Paloschi also states that these prior art glasses would be unsuitable for use as tableware. It is therefore respectfully submitted that is well known in the art that glasses for use as optical glasses or filters are unrelated to glasses for use as tableware.

In contrast to Paloschi, new Claim 23 recites:

> A zinc-containing optical glass, suitable for use as an optical element, with a refractive index (n_d) being in the range of from about 1.52 to about 1.66 and an Abbe number (v_d) being in the range of from about 35 to about 54;

said zinc-containing optical glass comprising, on an oxide basis, the composition of:

Material	Percentage by weight
SiO_2	38 - 58
ZnO	0.3 - 42
PbO	0 - <30
sum of ZnO+PbO	20 - 55
Li_2O	0 - <3
Na_2O	0 - 14
K_2O	0 - 12
sum of $Li_2O+Na_2O+K_2O$	≥2
F	0 - 3
MgO	0 - 6
CaO	0 - <5
SrO	0 - 6
BaO	0 - <0.9
B_2O_3	0 - <1
Al_2O_3	0 - <1.5
ZrO_2	0 - <2
Cs_2O	up to at most about 2.5.

Claim 23 recites a "zinc-containing **optical** glass, suitable for use as an **optical element**" (emphasis added). Paloschi only discloses glass tableware and decorative glassware. Paloschi also points out that filter glass and optical glass, such as disclosed in the prior art to Ritze and Tachibana, are unsuitable for use as tableware or glassware.

In addition, please note that in the outstanding Office Action, Paloschi was **not** applied against original Claim 3, which related to an optical element. Therefore, it is believed that the limitation relating to

an optical element is not shown by Paloschi. It is therefore respectfully submitted that Claim 23 distinguishes over and is not rendered obvious by Paloschi and is allowable. Claim 24 is also believed to be allowable over Paloschi based on its dependence from Claim 23.

Also in contrast to Paloschi, new Claim 25 recites:

A zinc-containing optical glass, suitable for use as an optical element, with a refractive index (n_d) being in the range of from about 1.52 to about 1.66 and an Abbe number (v_d) being in the range of from about 35 to about 54;

said zinc-containing optical glass comprising, on an oxide basis, the composition of:

Material	Percentage by weight
SiO_2	38 - 58
ZnO	0.3 - 42
PbO	0 - <30
sum of ZnO+PbO	20 - 55
Li_2O	0 - <3
Na_2O	0 - 14
K_2O	0 - 12
sum of $Li_2O+Na_2O+K_2O$	≥2
F	0 - 3
MgO	0 - 6
CaO	0 - <5
SrO	0 - 6
BaO	0 - <0.9
B_2O_3	0 - <1
Al_2O_3	0 - <1.5
ZrO_2	0 - <2

up to about 5% by weight of one member of the group and combinations thereof: Rb_2O, La_2O_3, Y_2O_3, and GeO_2 to adapt the optical properties of said zinc-containing optical glass.

Claim 25 recites a "zinc-containing **optical** glass, suitable for use as an **optical element**" (emphasis added). Paloschi only discloses glass tableware and decorative glassware. Paloschi also points out that filter glass and optical glass, such as disclosed in the prior art to Ritze and Tachibana, are unsuitable for use as tableware or glassware, and that it is well known to not look to or utilize optical glass for developing tableware glass.

In addition, please note that in the outstanding Office Action, Paloschi was **not** applied against original Claim 3, which related to an optical element. Therefore, it is believed that the limitation relating to an optical element is not shown by Paloschi. It is therefore respectfully submitted that Claim 25 distinguishes over and is not rendered obvious by Paloschi and is allowable. Claims 26-29 are also believed to be allowable over Paloschi based on their dependence from Claim 25.

Also in contrast to Paloschi, new Claim 30 recites:

> A zinc-containing optical glass, suitable for use as an optical element, with a refractive index (n_d) being in the range of from about 1.52 to about 1.66 and an Abbe number (v_d) being in the range of from about 35 to about 54;
>
> said zinc-containing optical glass comprising, on an oxide basis, the composition of:
>
> | Material | Percentage by weight |
> |---|---|

SiO_2	38 - 58
ZnO	0.3 - 42
PbO	0 - <30
sum of ZnO+PbO	20 - 55
Li_2O	0 - <3
Na_2O	0 - 14
K_2O	0 - 12
sum of $Li_2O+Na_2O+K_2O$	≥2
F	0 - 3
MgO	0 - 6
CaO	0 - <5
SrO	0 - 6
BaO	0 - <0.9
B_2O_3	0 - <1
Al_2O_3	0 - <1.5
ZrO_2	0 - <2.

Claim 30 recites a "zinc-containing **optical** glass, suitable for use as an **optical element**" (emphasis added). Paloschi only discloses glass tableware and decorative glassware. Paloschi also points out that filter glass and optical glass, such as disclosed in the prior art to Ritze and Tachibana, are unsuitable for use as tableware or glassware.

In addition, please note that in the outstanding Office Action, Paloschi was **not** applied against original Claim 3, which related to an optical element. Therefore, it is believed that the limitation relating to an optical element is not shown by Paloschi. It is therefore respectfully submitted that Claim 30 distinguishes over and is not rendered obvious by Paloschi and is allowable. Claims 31-44 are

also believed to be allowable over Paloschi based on their dependence from Claim 30. Further, it is respectfully submitted that Paloschi does not disclose the limitations recited in dependent Claims 32, 33, 34, 35, 37, 38, and 39.

In view of the above, reconsideration and withdrawal of the rejection with respect to the Paloschi reference is respectfully requested.

Rejection of Claims 1-3, 5, 7, 8, 10, and 14-18 Under 35 U.S.C. §102 (Tachibana et al., U.S. Patent No. 4,472,030):

Tachibana, as understood, shows a cesium-containing optical glass. Specifically, Tachibana discloses that the composition of the optical glass contain a substantial amount of Cs_2O by weight in the range of 6-32%. Tachibana further gives several examples of glass compositions in Table I of the specification. All of the examples contain at the very least 6% by weight of Cs_2O, and most of the examples contain around 10% by weight of Cs_2O.

Claim 23 is recited above. In contrast to Tachibana, Claim 23 recites:

"Cs_2O up to at most about **2.5**" (emphasis added).

As stated above, Tachibana discloses a **minimum** amount of Cs_2O as

being **6%**. It is therefore respectfully submitted that Tachibana does not teach or suggest the limitation of "Cs_2O up to at most about 2.5" set forth in Claim 23.

In addition, please note that in the outstanding Office Action, Tachibana was **not** applied against original Claim 9, which contained the limitation "Cs_2O up to at most about 2.5." Therefore, it is believed that this limitation is not shown by Tachibana. It is therefore respectfully submitted that Claim 23 distinguishes over and is not rendered obvious by Tachibana and is allowable. Claim 24 is also believed to be allowable over Tachibana based on its dependence from Claim 23.

Claim 25 is recited above. It is believed that the Tachibana reference is insufficiently specific because of the size of some of the ranges disclosed in comparison to some of the relatively narrow ranges recited in Claim 25 of the present invention. These broad ranges are not believed to permit a person of ordinary skill in the art to "clearly envisage" the claimed invention. In this regard, Applicant wishes to discuss herein below what is understood by the Applicant to be the probability of a chance selection of **all** of the preferred ranges as claimed in Claim 25 using the ranges disclosed in Tachibana as a

basis.

However, before the Tachibana reference is discussed in detail, Applicants wish to present a hypothetical example to evidence the method employed to calculate the probability of selection of the preferred ranges. In this very simple, hypothetical example, there are two components, labeled X and Y. A person is made aware of the desirability of combining Components X and Y, which components can be combined using different quantities of each component. Unfortunately, the person is not aware of what particular quantity of Component X is desirable to combine with a particular quantity of Component Y. However, the person is made aware that the preferred quantity of Component X is one of two possible quantities, specifically, Quantities A and B, and that the preferred quantity of Component Y is one of four possible quantities, specifically, Quantities C, D, E, and F. The person must then choose only one of the quantities of Component X to combine with only one of the quantities of Component Y in the hope of achieving the desired combination, which in this example is Combination BD (the combination of Quantities B and D). Box A shows the components, quantities, and all possible combinations thereof.

BOX A

	A		B	
Component X	50%		50%	
	C	D	E	F
Component Y	25%	25%	25%	25%
All Possible Combinations	AC, AD, AE, AF, BC, BD, BE, BF			

In order to find the preferred Combination BD, in this example it is assumed that the person must choose first from the available quantities of Component X, that is, between Quantities A and B. Once the person chooses either A or B, he then must choose from the available quantities of Component Y, that is, between Quantities C, D, E, and F, to create a combination. However, as shown in Box A, there are eight possible combinations (AC, AD, AE, AF, BC, BD, BE, BF) of Components X and Y, only one of which combinations, Combination BD, is correct. Therefore, the person has a one in eight chance of picking the preferred quantities to create the preferred combination.

Please note that the chances of selecting **only** the preferred quantity of Component X in the above example are very good. Since

there are only two possible quantities to choose from, the person has a one in two, or 50%, chance of selecting the preferred Quantity B. Further, the chances of selecting **only** the preferred quantity of Component Y, though less than Component X, are also fairly good. Since there are only four possible quantities to choose from, the person has a one in four, or 25%, chance of selecting the preferred Quantity D. However, the chances of selecting **both** of the preferred quantities, and thus the preferred Combination BD, **at the same time** is one in eight, or 12.5%. It is therefore evident that increasing the number of components to be used in a combination, as well as increasing the number of possible quantities of the components, substantially **decreases** the chances that a specific combination could be selected by chance from such numerous possibilities.

Specific Example of Probabilities Using Claim 25 and Tachibana Reference

This conclusion is evidenced when examining the teaching of the Tachibana et al. reference with respect to Claim 25 of the present application, in which example the odds of selecting all of the preferred ranges of Claim 25 from the ranges disclosed in the Tachibana et al. reference is very low. For example, in the

Tachibana et al. reference the content of BaO is within the range of 0 to 30%. In Claim 25, the content of BaO is within the range of zero to less than 0.9%, which means that the BaO content is in a range that is approximately 0.9%. For a person using the Tachibana et al. reference as a basis for producing a glass having a BaO content in the range of from zero to 0.9% as claimed in Claim 25, he would have to pick a range that encompasses 0.9%, such as, for example, 0-0.9% or 1.0-1.9%, from the overall range of 0-30% of the Tachibana et al. reference.

Please note, however, that there is a tremendous number of possible ranges of 0.9% in a 0-30% range. Therefore, the chance or probability that the person, using the 0-30% BaO range in the Tachibana et al. reference as a basis, would pick the zero to 0.9% BaO range as claimed in Claim 25 would be very low. To further explain by way of another conservative, hypothetical example, similar to the one above, it could be assumed that the Tachibana et al. reference shows approximately thirty-three 0.9% ranges, starting with zero and increasing in 0.9% increments, for example, as follows: 0-0.9%, 0.9-1.8%, 1.8-2.7%, ... 27.9-28.8%, 28.8-29.7%. Out of these thirty-three possibilities, it could be assumed that only one is the

preferred range for BaO. Therefore, in this example, the person using the Tachibana et al. reference as a basis would have approximately a one in thirty-three, or 3%, chance of selecting the preferred range. As stated above, this is a very conservative example, and it is presented for purposes of argument. The actual chances of selecting the preferred range could be substantially lower since there are a great number of possible 0.9% ranges that could be found in a 0-30% range. It is therefore respectfully submitted that the Tachibana et al. reference is not sufficiently specific in its disclosed ranges to teach or suggest the invention as claimed in Claim 25 based **solely** on the slight chance of picking the correct range of BaO.

Assuming for the sake of argument that a person were to essentially "beat the odds" and select the preferred 0.9% range for BaO, he still would have to overcome the odds of picking each and every preferred range for all of the other components. Further, with the addition of each component into the selection process, the odds of selecting **some or all** of the components in their preferred ranges, even in the conservative example presented herein, are low. For example, Al_2O_3 in the Tachibana et al. reference is found within a

range of 0-6%, whereas the Al_2O_3 range in Claim 25 is zero to less than 1.5%. Using the same method used above for BaO, it could be assumed that the Tachibana et al. reference shows four 1.5% ranges, starting with zero and increasing in 1.5% increments, for example, as follows: 0-1.5%, 1.5-3.0%, 3.0-4.5%, and 4.5-6%. Out of these four possibilities, it could be assumed that only one is the preferred range for SrO. Therefore, in this example, the person using the Tachibana et al. reference as a basis would have a one in four, or 25%, chance of selecting the preferred range of Al_2O_3.

Assuming, hypothetically, that the person must choose one of thirty-three possible ranges for BaO, and then has to select one of four possible ranges for Al_2O_3, the odds of picking **both** preferred ranges **at the same time** increases. To further explain, for every one of the thirty-three possible ranges for BaO, there are four possible ranges of Al_2O_3 that could be combined with it. Therefore, there are **132** possible combinations (33 BaO times 4 Al_2O_3) of the possible ranges of BaO and Al_2O_3. Since only **one** of the **132** possible combinations is the preferred combination of ranges, the person has a very slight, one in 132, or approximately 0.75%, chance of selecting the right combination of ranges.

As one can imagine, with each additional component, the chances of choosing **all** of the preferred ranges increases exponentially. Based on the above method of calculation, even in the very conservative example presented herein below, the odds of choosing **all** of the preferred ranges as set forth in Claim 25, using the both the Abstract and the specification of the Tachibana et al. reference as a guide, are approximately **one in 2857** (see Table 1.1). It is respectfully submitted that such odds would be extremely difficult to overcome.

Additional Example Of Probabilities Using Claim 25 And Tachibana et al. Reference And Including Intermediate Ranges

Again, it should be emphasized that the above examples are very conservative. In the above examples, **no intermediate ranges were considered**. The Tachibana et al. reference could be considered to show an even greater number of possible ranges if intermediate ranges are included and depending on how one determines what the possible ranges are. For example and as stated above, for a person using the Tachibana et al. reference as a basis for producing a glass having a BaO content in the range of from zero wt% to 0.9 wt% as claimed in Claim 25, he would have to pick a

range that encompasses about 0.9%, such as 0-0.9% or 5-5.9%, from the overall range of 0-30% of BaO in the Tachibana et al. reference. Including intermediate ranges and by counting in 0.5% increments starting at zero, there are 60 possible ranges of 0.9% in a 0-30% range (0-0.9, 0.5-1.4, 1-1.9 ... 28.5-29.4, 29-29.9). Therefore, the person using the Tachibana et al. reference, in this particular example, would have an approximate 1 in 60 chance, or an approximately 1.7% chance, of picking the range for BaO disclosed in Claim 25.

In view of the above, it is respectfully submitted that the preferred ranges of all of the components of the present invention as claimed in Claim 25 would not be readily discerned or "clearly envisaged" using the ranges of Tachibana et al. as a guide. It is respectfully submitted that Tachibana et al. could not reasonably be considered to teach, suggest, disclose, or render obvious the present invention as claimed.

In the following, the distinctions between the glass of Tachibana et al. reference and the glass of Applicants' Claim 25 are analyzed in detail and the analysis is summarized in the following Table 1.

Table 1 - Comparison Of Glass Of Tachibana (Based On Abstract And Disclosure of Tachibana) And Glass Of Applicants' Claim 25

Component or Sum of Components	Tachibana's Ranges of Components	Overlap between Applicants' Ranges of Components and Tachibana's Ranges of Components	Ratio of Applicants' Ranges of Components to Tachibana's Ranges of Components	Running Probability
SiO_2	24%	18%	0.75	1 in 1.3
ZnO	29%	29%	1	1 in 1.3
PbO	2.5%	2.5%	1	1 in 1.3
ZnO + PbO	31.5%	16.5%	.52	1 in 2.6
Li_2O	2.5%	2.5%	1	1 in 2.6
Na_2O	4.5%	4.5%	1	1 in 2.6
K_2O	19%	6%	.32	1 in 8
MgO	2.5%	2.5%	1	1 in 8
CaO	2.5%	2.5%	1	1 in 8
SrO	2.5%	2.5%	1	1 in 8
BaO	30%	0.9%	.03	1 in 267
B_2O_3	2%	1%	.5	1 in 534
Al_2O_3	6%	1.5%	.25	1 in 2,137
ZrO_2	3%	2%	.67	1 in 3,189

Explanation Of Ranges Of Components Shown In Table 1.1

Ranges For Silicon Dioxide And the sum of Zinc Oxide plus Lead Oxide

The Tachibana et al. reference discloses a range of 32 wt% to 56 wt% of SiO_2. Therefore, the total numerical range of SiO_2 that is disclosed in the Tachibana et al. reference is the difference between 56 wt% and 32 wt% which is 24 wt%. Applicants' Claim 25 claims a range of SiO_2 from 38 wt% to 58 wt%.

For SiO_2, the ranges in the Tachibana et al. reference and Applicants' Claim 25 overlap. The overlap is from 38 wt% (the low end of the range in Claim 25) to 56% (the high end of the range in Tachibana), for a total overlap of 18 wt% (56 wt% minus 38 wt%). The quotient of 18 wt% over 24 wt% represents the ratio of the range of overlap of SiO_2 compared to the total numerical range of SiO_2 as disclosed in the Tachibana et al. reference. The quotient is 0.75. In other words, for SiO_2, the 18% of the range of Claim 25 is 75% of the range of the Tachibana et al. reference.

The Tachibana et al. reference also discloses a range of 5 wt% to 36.5 wt% of ZnO + PbO. Therefore, the total numerical range of ZnO + PbO that is disclosed in the Tachibana et al. reference is the

difference between 5 wt% and 36.5 wt% which is 31.5 wt%. Applicants' Claim 25 claims a range of ZnO + PbO from 20 wt% to 55 wt%.

For ZnO + PbO, the ranges in the Tachibana et al. reference and Applicants' Claim 25 overlap. The overlap is from 20 wt% (the low end of the range in Claim 25) to 36.5% (the high end of the range in Tachibana), for a total overlap of 16.5 wt% (36.5 wt% minus 20 wt%). The quotient of 16.5 wt% over 31.5 wt% represents the ratio of the range of overlap of ZnO + PbO compared to the total numerical range of ZnO + PbO as disclosed in the Tachibana et al. reference. The quotient is 0.52. In other words, for ZnO + PbO, the 16.5% of the range of Claim 25 is 52% of the range of the Tachibana et al. reference.

As is well known in the mathematics of combinations and probabilities, when two sub-ranges of two separate possible ranges are considered, the portion of the total range of the two separate possible ranges that these ranges take up is the product of the fraction that the first range takes up in the first possible range times the fraction that the second range takes up in the second possible range.

Expressed differently, the probability of all the possible ranges and the position of all the possible ranges that the two ranges of SiO_2 and the sum of ZnO + PbO occupy in the two possible greater ranges, that is to say, of all the possible ranges in the two large ranges, that is, in the case of SiO_2, 24 wt% for the Tachibana et al. reference and 18 wt% for Claim 25 and, in the case of ZnO + PbO, 31.5 wt% for the Tachibana et al. reference and 16.5 wt% for Claim 25, is the product of 0.75 times .52, which is equal to 0.39.

Expressed differently, the probability that the two ranges of SiO_2 and ZnO would encompass the ranges of Claim 25 is 0.39 or 39%.

Thus, in the case of a 0.75 chance for SiO_2 and a 0.52 chance for ZnO + PbO, the probability that these two would exist together in Applicants' Claim 25 on the basis of the Tachibana et al. reference is a 39% chance. That means that 61% of the possible ranges of SiO_2 and ZnO + PbO would lie outside of the ranges claimed for SiO_2 and ZnO + PbO. In other words, the possibility that these two ranges would be in different positions in the ranges of the Tachibana et al. reference is 61% and would lie outside the ranges claimed in Claim 25.

It is submitted that the percentage of 39% is a relatively small

percentage of the total range of possibilities as suggested in the Tachibana et al. reference. The reciprocal of 0.39 is 2.6. In other words, Applicants' Claim 25 covers $^1/_{2.6}$ of the ranges as disclosed by the Tachibana et al. reference for the two components, SiO_2 and ZnO + PbO.

Using the above method, further probability can be calculated for the chances of selecting the claimed ranges of Claim 25 from the disclosure of Tachibana. Ultimately, the probability of selecting all of the claimed ranges of all of the components is **one in 3,189**. This means that a person using Tachibana as a basis for selecting the ranges of components disclosed in Claim 25 has **0.03%** chance of doing so. It seems highly unlikely that a person would successfully overcome these odds. It is therefore respectfully submitted that Tachibana does not teach or suggest the invention as claimed in Claim 25.

Also in contrast to Tachibana, Claim 26 recites "Cs_2O up to at most about **2.5**" (emphasis added). As stated above, Tachibana discloses a **minimum** amount of Cs_2O as being **6%**. It is therefore respectfully submitted that Tachibana does not teach or suggest the limitation of "Cs_2O up to at most about 2.5" set forth in Claim 26.

In addition, please note that in the outstanding Office Action, Tachibana was **not** applied against original Claim 9, which contained the limitation "Cs_2O up to at most about 2.5." Therefore, it is believed that this limitation is not shown by Tachibana. It is therefore respectfully submitted that Claim 26 distinguishes over and is not rendered obvious by Tachibana and is allowable. Claims 26-29 are also believed to be allowable over Tachibana based on their dependence from Claim 25.

Claim 30 is recited above. Claim 30 is believed to be allowable over Tachibana for similar reasons as set forth herein above with respect to Claim 25. Claims 31-44 are also believed to be allowable over Tachibana based on their dependence from Claim 30. Further, it is respectfully submitted that Tachibana does not disclose the limitations recited in dependent Claims 32, 34, 37, 38, and 39.

In view of the above, reconsideration and withdrawal of the rejection with respect to the Tachibana reference is respectfully requested.

Rejection of Claims 1-6 and 10-18 Under 35 U.S.C. §102 (Speit, U.S. Patent No. 4,820,326):

Speit, as understood, shows an ultraviolet optical filter glass

made from a colored alkali silicate glass. None of the embodiments of the alkali silicate glass, as can be best determined from the disclosure of Speit, contain any cesium. In addition, none of the embodiments of the alkali silicate glass of Speit contain any Rb_2O, La_2O_3, Y_2O_3, and GeO_2 or combinations thereof.

Claim 23 is recited above. In contrast to Speit, Claim 23 recites "**Cs_2O** up to at most about 2.5" (emphasis added). As stated above, Speit apparently does not teach or suggest a glass that contains any amount of Cs_2O. It is therefore respectfully submitted that Speit does not teach or suggest the limitation of "Cs_2O up to at most about 2.5" set forth in Claim 23.

In addition, please note that in the outstanding Office Action, Speit was **not** applied against original Claim 9, which contained the limitation "Cs_2O up to at most about 2.5." Therefore, it is believed that this limitation is not shown by Speit. It is therefore respectfully submitted that Claim 23 distinguishes over and is not rendered obvious by Speit and is allowable. Claim 24 is also believed to be allowable over Speit based on its dependence from Claim 23.

Claim 25 is recited above. In contrast to Speit, Claim 25 recites "up to about 5% by weight of one member of the group and

combinations thereof: **Rb_2O, La_2O_3, Y_2O_3, and GeO_2** to adapt the optical properties of said zinc-containing optical glass" (emphasis added). As stated above, Speit apparently does not teach or suggest a glass that contains any amount of any one of the compounds Rb_2O, La_2O_3, Y_2O_3, and GeO_2, or combinations thereof. It is therefore respectfully submitted that Speit does not teach or suggest the limitation of "up to about 5% by weight of one member of the group and combinations thereof: Rb_2O, La_2O_3, Y_2O_3, and GeO_2" set forth in Claim 25.

In addition, please note that in the outstanding Office Action, Speit was **not** applied against original Claim 8, which contained the limitation "up to about 5% by weight of one member of the group and combinations thereof: Rb_2O, La_2O_3, Y_2O_3, and GeO_2." Therefore, it is believed that this limitation is not shown by Speit. It is therefore respectfully submitted that Claim 25 distinguishes over and is not rendered obvious by Speit and is allowable. Claim 24 is also believed to be allowable over Speit based on its dependence from Claim 25.

Also in contrast to Speit, Claim 26 recites "Cs_2O up to at most about **2.5**" (emphasis added). It is therefore respectfully submitted

that Claim 26 distinguishes over and is not rendered obvious by Speit for the same reasons as set forth herein above with respect to Claim 23 and is allowable. Claims 26-29 are also believed to be allowable over Speit based on their dependence from Claim 25.

Claim 30 is recited above. Using the above method for calculating probability, the probability can be calculated for the chances of selecting the claimed ranges of Claim 30 from the disclosure of Speit. As shown in Table 2, the probability of selecting all of the claimed ranges of all of the components in Claim 30 using the disclosure of Speit is **one in 2,518**. This means that a person using Speit as a basis for selecting the ranges of components disclosed in Claim 30 has **0.04%** chance of doing so. It seems highly unlikely that a person would successfully overcome these odds. It is therefore respectfully submitted that Speit does not teach or suggest the invention as claimed in Claim 30.

Table 2 - Comparison Of Glass Of Speit (Based On Abstract And Disclosure of Speit) And Glass Of Applicants' Claim 30

Component or Sum of Components	Speit's Ranges of Components	Overlap between Applicants' Ranges of Components and Speit's Ranges of Components	Ratio of Applicants' Ranges of Components to Speit's Ranges of Components	Running Probability
SiO_2	19%	7%	0.368	1 in 3
ZnO	10.5%	10.2%	0.971	1 in 3
PbO	13.9%	13.9%	1	1 in 3
ZnO + PbO	24.4%	7.3%	.3	1 in 9
Li_2O	3%	3%	1	1 in 9
Na_2O	10%	10%	1	1 in 9
K_2O	9.4%	9.4%	1	1 in 9
$Li_2O + Na_2O + K_2O$	22.4%	22.4%	1	1 in 9
F	0.1, 0.5%	0.1% or 0.5%	1	1 in 9
MgO	8.6%	6%	.7	1 in 13
CaO	8.6%	5%	.58	1 in 23
SrO	8.6%	6%	.75	1 in 31
BaO	8.6%	0.9%	.104	1 in 295
B_2O_3	8.5%	1%	.117	1 in 2,518
Al_2O_3	0.55%	0.55%	1	1 in 2,518

Claims 31-44 are also believed to be allowable over Speit based on their dependence from Claim 30. Further, it is respectfully submitted that Speit does not disclose the limitations recited in dependent Claim 35.

In view of the above, reconsideration and withdrawal of the rejection with respect to the Speit reference is respectfully requested.

Rejection of Claims 1-3, 9-11, and 13-18 Under 35 U.S.C. §102 (Ritze, U.S. Patent No. 4,106,946):

Ritze, as understood, shows a glass for use as a steep absorption edge filter glass. None of the embodiments of the filter glass, as can be best determined from the disclosure of Ritze, contain any cesium. In addition, none of the embodiments of the filter glass of Ritze contain any Rb_2O, La_2O_3, Y_2O_3, and GeO_2 or combinations thereof.

Claim 23 is recited above. In contrast to Ritze, Claim 23 recites "**Cs_2O** up to at most about 2.5" (emphasis added). As stated above, Ritze apparently does not teach or suggest a glass that contains any amount of Cs_2O. It is therefore respectfully submitted that Ritze does not teach or suggest the limitation of "Cs_2O up to at most about 2.5" set forth in Claim 23.

In addition, please note that in the outstanding Office Action, Ritze **was applied** against original Claim 9, which contained the limitation "Cs_2O up to at most about 2.5." However, it is believed that this limitation is **not** shown by Ritze. It is respectfully submitted that no mention of cesium or the compound Cs_2O could be found in the disclosure of Ritze. It is therefore respectfully submitted that Claim 23 distinguishes over and is not rendered obvious by Ritze and is allowable. Claim 24 is also believed to be allowable over Ritze based on its dependence from Claim 23.

Claim 25 is recited above. In contrast to Ritze, Claim 25 recites "up to about 5% by weight of one member of the group and combinations thereof: **Rb_2O, La_2O_3, Y_2O_3, and GeO_2** to adapt the optical properties of said zinc-containing optical glass" (emphasis added). As stated above, Ritze apparently does not teach or suggest a glass that contains any amount of any one of the compounds Rb_2O, La_2O_3, Y_2O_3, and GeO_2, or combinations thereof. It is therefore respectfully submitted that Ritze does not teach or suggest the limitation of "up to about 5% by weight of one member of the group and combinations thereof: Rb_2O, La_2O_3, Y_2O_3, and GeO_2" set forth in Claim 25.

In addition, please note that in the outstanding Office Action, Ritze was **not** applied against original Claim 8, which contained the limitation "up to about 5% by weight of one member of the group and combinations thereof: Rb_2O, La_2O_3, Y_2O_3, and GeO_2." Therefore, it is believed that this limitation is not shown by Ritze. It is therefore respectfully submitted that Claim 25 distinguishes over and is not rendered obvious by Ritze and is allowable. Claim 24 is also believed to be allowable over Ritze based on its dependence from Claim 25.

Also in contrast to Ritze, Claim 26 recites "Cs_2O up to at most about **2.5**" (emphasis added). It is therefore respectfully submitted that Claim 26 distinguishes over and is not rendered obvious by Ritze for the same reasons as set forth herein above with respect to Claim 23 and is allowable. Claims 26-29 are also believed to be allowable over Ritze based on their dependence from Claim 25.

Claim 30 is recited above. Using the above method for calculating probability, the probability can be calculated for the chances of selecting the claimed ranges of Claim 30 from the disclosure of Ritze. As shown in Table 3, the probability of selecting all of the claimed ranges of all of the components in Claim 30 using

the disclosure of Ritze is **one in 642**. This means that a person using Ritze as a basis for selecting the ranges of components disclosed in Claim 30 has **0.15%** chance of doing so. It seems highly unlikely that a person would successfully overcome these odds. It is therefore respectfully submitted that Ritze does not teach or suggest the invention as claimed in Claim 30.

Table 3 - Comparison Of Glass Of Ritze (Based On Abstract of Ritze) And Glass Of Applicants' Claim 30

Component or Sum of Components	Ritze's Ranges of Components	Overlap between Applicants' Ranges of Components and Ritze's Ranges of Components	Ratio of Applicants' Ranges of Components to Ritze's Ranges of Components	Running Probability
SiO_2	23%	18%	0.78	1 in 1.3
ZnO	16%	16%	1	1 in 1.3
$Li_2O + Na_2O + K_2O$	22%	22%	1	1 in 1.3
F	2%	2%	1	1 in 1.3
MgO	6%	6%	1	1 in 1.3
CaO	15%	5%	.33	1 in 4
SrO	12%	6%	.5	1 in 8
BaO	8%	0.9%	.11	1 in 71
B_2O_3	9%	1%	.11	1 in 642
Al_2O_3	1.5%	1.5%	1	1 in 642

Claims 31-44 are also believed to be allowable over Ritze based on their dependence from Claim 30. Further, it is respectfully submitted that Ritze does not disclose the limitations recited in dependent Claims 32, 33, 34, 35, and 38.

In view of the above, reconsideration and withdrawal of the rejection with respect to the Ritze reference is respectfully requested.

Rejection of Claims 1 and 4-8 Under 35 U.S.C. §112, Second Paragraph:

Claims 1 and 4-8, which claims have been canceled herein without prejudice, were rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Specifically, the Examiner stated that the term "substantially" rendered Claims 1 and 4-7 indefinite. In addition, the Examiner stated that the term "precisely" rendered Claim 8 indefinite. Newly-presented Claims 23-44 do not use the terms "substantially" and "precisely" as used in canceled Claims 1 and 4-8, and thus are believed to overcome the Examiner's rejection.

Art Made of Record:

The prior art made of record and not applied has been carefully

reviewed, and it is submitted that it does not, either taken singly or in any reasonable combination with the other prior art of record, defeat the patentability of the present invention or render the present invention obvious. Further, Applicants are in agreement with the Examiner that the prior art made of record and not applied does not appear to be material to the patentability of the claims currently pending in this application.

In view of the above, it is respectfully submitted that this application is in condition for allowance, and early action towards that end is respectfully requested.

Leave to Delay Treatment of Formal Objections Until Allowable Subject Matter is Indicated:

In accordance with 37 C.F.R. §1.111, it is hereby respectfully requested that any objections or requirements not fully treated and set forth in the outstanding Office action that relate to form and are not necessary to further consideration of the now pending claims, be held in abeyance until allowable subject matter is indicated.

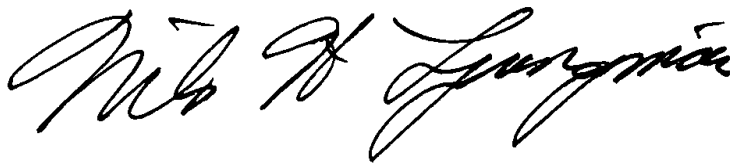
Summary and Conclusion:

It is submitted that Applicants have provided a new and unique ZINC-CONTAINING OPTICAL GLASS MATERIALS. It is submitted that

the claims, as presented, are fully distinguishable from the prior art. Therefore, it is requested that a Notice of Allowance be issued at an early date.

If mailed, I, the person signing this certification below, hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231, on the date indicated in the certification of mailing on the transmittal letter sent herewith, or if facsimile transmitted, I, the person signing this certification below, hereby certify that this paper is being facsimile transmitted to the United States Patent and Trademark Office on the date indicated in the certification of facsimile transmission on the transmittal letter which is being facsimile transmitted herewith.

Respectfully submitted,



Nils H. Ljungman, Esq.
Attorney for the Applicant
Reg. No. 25,997
Name of person signing certification
Nils H. Ljungman & Associates
P.O. Box 130
Greensburg, PA 15601-0130
Telephone:(724) 836-2305
Facsimile:(724) 836-2313